DOCUMENT RESUME

ED 450 493 EC 308 247

AUTHOR Stough, Laura M.; Palmer, Douglas J.
TITLE Expertise in Special Educators.
INSTITUTION Texas A and M Univ., College Station.
SPONS AGENCY Special Education Programs (ED/OSERS), Washington, DC.
PUB DATE 1996-00-00
NOTE 27p.; Paper presented at the Annual Meeting of the Teacher Education Division of the Council for Exceptional Children (Washington, DC, November 1996).
CONTRACT H0291C50157
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Decision Making Skills; *Disabilities; Elementary Secondary Education; Interviews; *Recall (Psychology); *Self Evaluation (Individuals); *Special Education Teachers; Teacher Education; *Teaching Methods; Videotape Recordings

ABSTRACT

Using a stimulated recall procedure, this study examined the reflections of identified "expert" special educators who were working in a variety of instructional settings with differing student populations. Participants were 13 special education teachers from urban, mid-size, and rural school districts. Special education supervisors were asked to nominate teachers who had at least five years of teaching experience, were recognized as being effective teachers, instructed students that generally made excellent progress, and were generally viewed as superior special education teachers. Teachers were interviewed about their classroom experiences and teaching philosophy and then viewed videotapes of their instruction to stimulate thoughts and decisions that were occurring during the instructional episode. Findings from the study indicate the stimulated recall procedures successfully prompted teachers to readily and prolifically express their thoughts and emotions concerning targeted teaching sequences. Many times teachers did not restrict their comments to the episode that they observed on the videotape, but expanded on how they made instructional decisions, describing previous events had influenced their decision-making. Teachers used instructional diagnosis and frequently consulted regular education teachers to teach students with special needs. The use of the stimulated recall procedure for transferring expertise is discussed. (Contains 27 references.) (CR)

Reproductions supplied by EDRS are the best that can be made
from the original document.

EC

ED 450 493

EXPERTISE IN SPECIAL EDUCATORS

Laura M. Stough, Ph.D.

and

Douglas J. Palmer, Ph.D.

Texas A&M University

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Paper presented at the annual meeting of the Teacher Education Division of the Council for Exceptional Children, Washington, D.C. November, 1996

The research reported in this paper was supported by Grant #H0291C50157 from the Office of Special Education Programs, U.S. Department of Education, to Texas A&M University. Points of view or opinions in this paper do not necessarily represent official agency positions.

EC 308247

BEST COPY AVAILABLE

Expertise in Special Educators

Providing a free, appropriate public education for all students with a disability has been a national educational issue for over 20 years. Availability of adequate numbers of qualified educators and related service personnel has been identified as a necessary prerequisite to providing an "appropriate" education (IDEA;PL 101-476, Turnbull, 1993). Unfortunately, there is a lack of clarity in the field regarding what it means to be a "qualified" special educator. For example, since only a small proportion of special education teachers remain in the field for longer than four or five years (Brownell & Smith, 1992), many students with disabilities are educated by novices who may be certified but have limited experience and competence. In addition, primarily due to concerns regarding limited availability of special education teachers, a number of alternative teacher certification programs with few prerequisites or training requirements have been initiated in recent years (Buck, Polloway & Robb, 1995). Concerns have been expressed that many individuals participating in these programs are inadequately prepared to meet the instructional needs of their students (Buck et al., 1995; Sindelar & Marks, 1993). Furthermore, even though a number of competencies have been identified that are purportedly needed by special education teachers (e.g., Graves, Landers, Lokerson, Luchow, & Horvath, 1993), these competencies have been derived, to large extent, in a piecemeal fashion, with limited empirical support and fail to recognize the importance of instructional contexts on effective instruction (Blanton, 1992; Goldenberg and Gallimore, 1991). We know little about what quality special educators think about and do in the classroom.

Several changes in the nature of special education have particularly influenced the role that these teachers now play in the educational system. The normalization and mainstreaming movements over the last twenty-five years called for the inclusion of special education students in regular education classrooms (Reynolds, Wang, &

Walberg, 1987; Stainback & Stainback, 1992). As a result, special and regular education teachers are instructing classrooms of students with wide ranges of academic and behavioral needs in a variety of instructional arrangements (Fuchs & Fuchs, 1994). Special education teachers also are increasingly called upon to consult with and support regular educators in their instruction of special needs students, particularly those with mild and moderate disabilities (Sugai & Tindal, 1993). Arick & Klug (1993) found in a survey of 1,468 special education administrators, that the highest-rated training need of special educators was training them so that they could work effectively with other instructional personnel. The expert special educator, then, may be seen as one that is skillful in facilitating this type of collaboration with his or her regular education colleagues.

Special educators also are instructing an increasingly diverse population of students. As a group, minorities often comprise the majority of students in public schools, and in terms of students being served by special education, minority students continue to be over represented (Artiles & Trent, 1994). Unfortunately, we know little about how educators develop their cognitions, beliefs, and skills to teach diverse students (Grant & Secada, 1990). Grant and Secada suggest that knowledge and skills of effective teachers may serve as a starting point for training novice teachers.

The changing role of the special educator begs for a close examination of those teachers who are particularly effectual in educating students with special needs and who consult with regular educators regarding instruction of students with disabilities. Researchers have used the construct of expertise to conceptualize the knowledge that superior teachers in regular education possess (e.g., Berliner, 1986; Borko & Livingston, 1989; Carter Cushing, Sabers, Stein, & Berliner, 1988; Peterson & Comeaux, 1987; Shulman, 1986). Expertise is generally defined as superior knowledge and skill within a specific domain (e.g., Chase & Simon, 1973; Chi, Feltovich & Glaser, 1981; Ericsson & Smith, 1991; Glaser & Chi, 1988). Experts have been found to perceive meaningful

patterns in their area of expertise, to be faster than novices at performing a task, and to have superior short-term and long-term memory about events (Glaser & Chi, 1988).

In research on expert teachers, some researchers (e.g., Leinhardt, 1983; Leinhardt & Smith, 1985; Shulman, 1986) have investigated expert instruction within specific subject matters, while other studies have focused on teacher's pedagogical content knowledge (e.g., Shulman, 1986). Research on expert teachers in the regular classroom setting focuses on how they organize information their knowledge about the classroom and on the instructional decisions that they make. Several studies have suggested that expert teachers not only have more knowledge than novices: they differ in how their knowledge is organized (Borko & Livingston, 1989; Carter, Cushing, Sabers, Stein, & Berliner, 1988), they make different judgments about students (Leinhardt, 1983; Cadwell & Jenkins, 1986; Stader, Colyar, & Berliner, 1990) and pay attention to different information about students when planning and implementing their lessons (Carter & Doyle, 1987; Strahan, 1989). Unfortunately, there have been few investigations of expert special education teachers.

A stimulated recall procedure has been frequently used to study teachers' interactive thoughts and decisions (See Clark & Peterson, 1986). This procedure consists of a teacher viewing a videotape of his or her instruction to stimulate thoughts and decisions that were occuring during the instructional episode. Using this procedure, this study examined the reflections of identified "expert" special educators who were working in a variety of instructional settings with differing student populations.

Method

Participants

Participants were 13 special education teachers from urban, mid-size, and rural school districts. Special education supervisors in each of these districts were asked to nominate teachers who 1) had at least five years of teaching experience, 2) were

recognized among their peers, parents, or the community as being effective teachers, 3) instructed students that generally made excellent progress in achieving their individualized education plan (IEP) objectives, and 4) were generally viewed by their supervisors as superior special education teachers. Principals of the nominated teachers were asked to confirm or disagree with these nominations. Teachers who were both nominated and who received confirmation for their selection were contacted for participation. Similar criteria and methods have been used by other researchers in the area of teacher expertise (see Berliner, 1986; 1987; Bartelheim & Evans, 1993; Blanton, Blanton, & Cross, 1993) in order to select teachers who were "expert" and thus were used in this study to increase the probability that these teachers were part of a special sample.

Identified teachers were selectively sampled to represent a diverse array of instructional settings (i.e.. resource, inclusive, content mastery, and self-contained), instructional levels (i.e.. preschool, elementary, middle school, and high school) and student characteristics (learning disabilities, emotional disturbance, and mental retardation). The sample was also selected so that diverse ethnic minority groups were represented in both the teachers and the students who were invited to participate. The principal, special education coordinator, and the special educator themselves were each asked to describe the content domains and the curricular activities in which they felt the teacher was "particularly effective." These were the areas of instruction or responsibility that eventually became the focus of our investigation.

Procedure

Data was collected from the participants by five different researchers, each of whom was trained in interview and stimulated recall procedures. These researchers used variety of methods to obtain information from each of the teacher participants.

Each researcher was trained to follow the same procedures in collecting the following data:

Interviews. Each teacher was interviewed and asked a standard series of questions about their classroom experiences and teaching philosophy (see Appendix A). The procedures to be used in the study were explained in detail and teachers were encouraged to share any discomforts or suggest any areas of particular expertise they felt they had with the researcher. These interviews lasted approximately forty-five minutes, resulting in a total of ten hours of audiotaped interviews.

Videotaping. Six one-hour videotapes were made of each classroom teacher. The first videotaped session was made in order to explain the researcher's presence in the classroom to the students, to orient the researcher to the classroom, and to acclimate the class to the presence of the videotape recorder. Teachers were asked to select an instructional sequence and content area in which they felt that they were particularly skilled in delivering instruction. They were also asked to identify upcoming consultation sessions that they would have with regular educators or with other personnel providing transition services. Videotapes of these sessions were made during the natural course of the semester and scheduled by the special education teacher. In general, these videotapes were made over a period of two months. Approximately six hours of videotape was used per teacher for a total of seventy-eight hours of videotape.

Observations. Observations were made in conjunction with each videotaping session. Notes were made concerning the number of students in the classroom, the number of students who were classified as special education students, the ratio of male to female students, the ethnicity of the students, the content area taught, grade level, and the presence of adults other than the teacher in the classroom. A map was made of the classroom and the seating location of all students was noted. For each student enrolled in special education, their classification was noted and the amount of time they had been with the teacher observed. Observational notes were made both while

videotaping the classroom and refined while the researcher reviewed the videotape at a later date.

Stimulated Recall. After each observation, an interview took place with the teacher as soon as possible following each observation and videotaping. A stimulated recall procedure (see Ericsson & Simon, 1984) was used to obtain teacher's reflections about the classroom interactions or consultations. This procedure replicated that used by other researchers in the field of teacher cognition (e.g., Peterson & Cormeux, 1987) in that teachers were asked to recall, to the extent possible, their thoughts and emotions during the classroom or consultative sequence.

During the stimulated recall procedure, the teacher viewed the videotape along with the investigator. The teacher was instructed to stop the videotape at points when s/he recalled thoughts or feelings that occurred during instruction or consultation. If a period of three minutes passed without comment by the teacher, the experimenter stopped the videotape and asked open-ended questions such as, "What were you trying to accomplish here?" or "What were your thoughts or feelings at this point?" All comments by the investigator and the teacher were simultaneously recorded on audiotape. Approximately forty-five minutes of audiotape was obtained per recall session for an approximate total of four and a half hours per teacher and fifty-eight and a half hours of audiotape across all teachers.

Field Notes. Immediately following each contact with a teacher, the researchers completed field notes in which they noted technical notes (problems in collecting the data, special considerations for during their next contact with the teacher), analytical notes (analytical and conceptual reflections) and their general observations (the mood, tone, of the session). These notes were meant to supplement observational notes made during observations during classroom instruction. Approximately six pages of field notes were made for each teacher.

Data Analysis

Following analytical procedures discussed by Glaser and Strauss (1967) and Strauss and Corbin (1990) the data from the special education teachers was analyzed. Only the results from the last five stimulated recall procedures were used as the first recall session was used to acclimate participates to the procedure. A qualitative analysis of the data was used to examine the reponses of the thirteen teachers in this study. All interviews and stimulated recall recordings were transcribed, producing a total of 1,766 pages of transcription. We incorporated data obtained from the interviews, observations, stimulated recall procedures, and from field notes. All interview and stimulated recall transcripts were first analyzed using open coding wherein data were analyzed using a line-by-line analysis (Strauss & Corbin, 1990). In open coding, events or verbal phrases are coded using labels that describe them at a higher level of abstraction. Observational transcripts were analyzed as a whole by examining the types of activities and the action and interaction patterns within the classroom. We noted the content of the comments made by both teachers and students and their effects on subsequent communication.

Initially, each teacher's interview transcripts and observational notes were analyzed separately. The conceptual labels were discussed among the researchers and then were grouped together to form tentative categories. These tentative categories will be used during the next year of our study while we collect data on an additional twelve teachers.

Memberchecks. A second interview was used at the end of the stimulated recall sessions and after open coding to verify the results of the preliminary analysis of the stimulated recall sessions conducted with each teacher. As the analysis of each teachers' transcripts was individualized, the nature and length of these second interviews varied. Overwhelmingly, the majority of teachers agreed with the major categories of concern that the researchers noted following open coding.

Results

At this point in our project, we refining the initial categories of interest while we collect data on an additional teachers, who will make our total number of participating special educators participating twenty-five. For the purposes of this paper we report on our findings from one of our teachers so that we may clearly present several of these initial categories of interest.

Teacher #7

Teacher #7 was a Middle School Teacher in a school in an urban school district in the Southwest. Teacher #7 was selected as "Teacher of the Year" for her school. She had seventeen years of teaching experience, most of which had been in a resource room setting. However, for the last seven years, she had been teaching in a Content Mastery classroom, an instructional arrangement in which students who were experiencing academic difficulties in their regular education coursework were sent to work with the special education teacher who modified and remediated their assignments. Teacher #7 served students who were performing below grade level and at-risk, as well as students who were categorized as having special needs. She worked with a teaching assistant, as well as consulting with regular educators who served special education students in their classrooms.

Teacher Diagnosis of Students

Teacher #7 engaged in a pattern of thought during instruction that was expressed throughout all of her stimulated recall sessions. When a student would visit her classroom with difficulty on a task, Teacher #7 would typically "diagnose" the student's ability to successfully engage in the task, based on her general knowledge of the student and of the specific task demands and student capabilities. Her diagnosis,

along with the goals and student knowledge, then led her to develop a strategy for assisting the student in the academic task. For example, she comments on Ann, a student with learning disabilities, who comes to her classroom for help on a social studies assignment about Texas history:

> I just wanted to check on her and make sure she was doing okay, uh, she has at the bot...let's see it's the one at the bottom of the page it's asking basically the sentence they want the place that the, uh, Ben Milam an...how many, how many people came to help Ben Milam in San Antonio and she wrote 300 and that was correct and but it was, um, she needed to put the place as San Antonio is where they were going and she put attacked she misinterpreted the sentence and so I'm trying to get her to read because it's not a sentence that is exactly like the book and, um, she finally figured it out, I'm trying to think of what the top one...she knows where the answer is I think she's trying to interpret the sentence and I think it's another confusion because the sentence isn't just like the one in the book and so, it's hard to communicate to her that it doesn't necessarily always have to be exact... (Teacher #7, Stimulated recall, May 10, 1996).

In this example, Teacher #7 demonstrates her knowledge of the task in which Ann is engaged (questions over a reading assignment), her knowledge of the content domain of the task (Texas history), and her knowledge of the student (what were the student's general learning difficulties). From this knowledge base she monitors the progress of Ann on the task and then makes a diagnosis of what she believes is Ann's "state of mind" or learning state. It is from this diagnosis that Teacher #7 then selects an appropriate instructional modification for Ann.

Modification

Teacher #7 commented with frequency about the modifications she used to instruct her students. Modifications that were identified in the analysis of her

stimulated recall and interview transcripts included the following: direct instruction of the material, reteach the material, use instructional materials as aides, prompting/cueing, modeling, modifying the task, and giving the student more practice at the task. Teacher #7 carefully observed the result of her modifications, assessing each student's progress after it's implementation. If she deemed that the modification she had applied was not sufficient to assist the student, she rediagnosed, then applied a new modification.

In her comments about José and two other students with whom she had been working closely with on writing a paper, Teacher #7 focuses on the students' progress and the instructional modifications needed by the students:

> ...he has got his cover drawn for the project and he was working on tracing a picture of a gorilla which he had to put in his folder with his paper and so the other girls are are a little bit further behind but I think they're also in a different class, the whole sixth grade's doing it but they're all at different parts um, I took José's paper and sort of showed them an example of what it should look like and mainly what the teachers are asking them is just to take each section of their notes and make a paragraph using their notes for part one through part eight and so I read the first paragraph for them so they could see what it sounded like putting the information together... (Teacher #7, Stimulated recall, May 2, 1996).

In this excerpt, Teacher #7 uses two modifications; modeling (when she uses José's example) and prompting (when she reads the paragraph aloud). Immediately following Teacher #7's use of these modifications, she again monitors the progress of the girls in the excerpt, then rediagnoses their understanding of the task and their "state of mind."

Consultation and Collaboration with Regular Educators

Teacher #7 frequently discussed her consultation and collaboration with her regular education colleagues. The consultation activities that were observed in the observations were typically brief (less than three minutes), unplanned, and took place in the special education classroom when the regular education teacher entered to consult with the special educator. It was not unusual for instruction to be interrupted when these consultations took place:

> ...I think sometimes that the interruption is it's just it's commonplace, um, as department chair I mean people have questions for me continuously and I don't have a conference period where they can say oh I can ask her that at third period so if and if it's a situation where this teacher calls and I need to give him an answer then you know I need to do that, uh, here are times when I will say "I'm sorry but I can't talk to that person right now," um, so it depends on what the situation is, sometimes I can be you know if a teacher comes in and they see me sitting with a student working with them and they go ahead and interrupt me anyway, um, I really would prefer they just leave me a note and I'll get back to them, I understand there are emergencies so they're we all have those so it's just kind of one of those things that happens [laughs] and the kid are pretty used to it so, uh, we have so many people that visit that people can walk in the room and it it doesn't bother them.

This style of consultation was one that we frequently observed in the special education teachers who participated in the project. Although teachers at times expressed frustrations about the nature of these consultations, they also accepted that regular educators had few opportunities to consult with them about special education students in a more leisurely manner.

Discussion

The teachers who participated in the stimulated recall procedure quickly became familiar and comfortable with the technique. Teachers seldom relied on prompts from the researcher and readily and prolifically expressed their thoughts and emotions concerning targeted teaching sequences. Many times these teachers did not restrict their comments to the episodes that they observed on the videotape, but expanded on how they made instructional decisions, describing previous events had influenced their decision-making.

In the case of Teacher #7, we observed that this teacher made frequent use of what we have labeled "instructional diagnosis." Her use of diagnosis is not unlike that described by Patel (1985) in her description of radiologists determining pathology when examining radiographs: she used extensive content knowledge and her particular knowledge of the student to arrive at a diagnosis. Immediately following her diagnosis, she applied a modification to remedy the learning difficulty that the student was encountering. This teacher's diagnosis process differs, however, from that of doctors in that this procedure was repeated numerous times over the course of the instructional period, with a diagnosis of one student often being made several times in the space of five or ten minutes.

Of interest to us was that this "instructional diagnosis" did not seem to rely on the category assigned to a student. Instead, the teacher closely observed the progress of the student, basing her observation on the student's progress together with her past knowledge of the student. Also of interest to us were the inferences that teachers in our project seemed to make about a given student's "state of mind" in this diagnostic process. These statements were based on information from multiple sources; observations of the student, past experiences in working with the student, and the teacher's experience in working on similar tasks with other students.

Finally, we observed teachers in our project engaging in frequent consultations with regular education teachers. These consultations were brief and spontaneous, and required the special education teacher to manage the consultation along with her instruction in the classroom. While there has been much prescriptive suggestions regarding consultative practices in special education, this is the first time, to our knowledge, that there has been a report on the actual consultative practices of special educators.

Implications

There is extant research on the training of novice teachers using the knowledge and information from expert teachers (see Berliner, 1986; 1987). This research suggests that novice teachers may be instructed to use similar routines and strategies as do expert teachers. However, it is often the case that an expert educator (such as a supervising teacher) has difficulty in clearly communicating the reasons for his or her instructional decisions. It is suggested by researchers in the field of expertise that this difficulty is due to the automatization of the behaviors that an expert possess: They are less accessible at a conscious level. The implications are that our present system of student teaching is limited in its effectiveness, no matter how expert the supervising teacher, simply because it is difficult for the supervising teacher to explain why he or she makes certain instructional decisions in the classroom.

An alternative method for transferring expertise, while still providing a real-world example, is with the use of case studies. In a Bay and Bryan (1991) study, it was found that novice teachers, after viewing videotapes of teachers instructing children with disabilities, increased their reflectivity after hearing audiotapes from stimulated recall procedures. These audiotapes included comments from teachers while they watched themselves in a videotape of an earlier teaching session. However, the effects of using such a format as part of a teacher training program has not been assessed.

Teacher educators should consider the use of this modified stimulated recall procedure as an appropriate intervention in their training of preservice teachers. This technique, when preservice teachers are paired, is easily implemented, requiring a minimum of supervision on the part of the teacher educator, while producing a maximum of opportunity for reflective thought. Sessions may be audio taped and reviewed by teacher educators at a later date, if desired, and thus give important insights into how preservice teachers cognitively process their own teaching. In addition, the process of transferring expert knowledge and skills to the novice, wherein the novice observes the expert reflecting upon his or her instruction in the special education classroom, might be explored.

Appendix A

Interview #1 Questions

1. How long have you been teaching?
2. Tell me about previous settings in which you have taught.
3. Describe the classroom in which you are presently teaching.
4. Tell me about the student that you are currently teaching.
5. How would you describe your teaching style?
6. What would you say is your teaching philosophy?
7. What do you consider to be your teaching strengths?
8. What do you consider to be your teaching weaknesses?
9. Can you think of a particular teaching experience that has changed your perspective on teaching special education?
10. What do you feel is the most rewarding aspect of your job?
11. What do you feel is the most frustrating aspect of your job?
12. When you consider your own teacher training program, what was the most helpful part of that program to your development as a teacher? The least useful? What changes would you suggest in designing teacher training programs?
13. What do you think makes a special education teacher an expert?

REFERENCES

Arick, J. R., & Krug, D. A. (1993). Special education administrators in the United States: Perceptions on policy and personnel issues. The Journal of Special Education, 27(3), 348-364

Artiles. A. J., & Trent, S. C. (1994). Overreprestation of minority students in special education: A continuing debate. The Journal of Special Education, 27, 410-437.

Bartelheim, F. J., & Evans, S. (1993). The presence of reflective-practice indicators in special education resource teachers' instructional decision making. The Journal of Special Education, 27, 338-347.

Bay, M., & Bryan, T. (1991). Exceptionality. New York: Springer-Verlag.

Berliner, D. (1986). In pursuit of the expert pedagogue. Educational Researcher, 15, 5-13.

Berliner, D. C. (1987). Ways of thinking about students and classrooms by more and less experienced teachers. In J. Calderhead (Ed.), Exploring teachers' thinking (pp. 60-83). London: Cassell Educational Limited.

Blanton, L. P. (1992). Preservice education: Essentional knowledge for the effective special education teacher. Teacher Education and Special Education, 15 (2), 87-96.

Blanton, W., Blanton, L., & Cross, L. (1993). An Exploratory Study of How Expert and Novice Regular Education Teachers and Special Education Teachers Think and Make Instructional Decisions About Special Needs Students. Paper presented at the meeting of the American Education Research Association, Atlanta, GA.

Borko, H., & Livingston, C. (1989). Cognition and improvisation: Differences in mathematics instruction by expert and novice teachers. American Educational Research Journal, 26, 473-498.

Brownell, M. T. & Smith, S. W. (1992). Attraction/Retention of special education teachers: Critique of current research and recommentations for retention efforts. Teacher Education and Special Education, 15 (4), 229-249.

Buck, G. H., & Polloway, E. A., & Robb, S. M. (1995). Alternative Certification Programs: A national Survey. Teacher Education and Special Education, 18 (1), 39-48.

Cadwell, J., & Jenkins, J. (1986). Teachers' judgments about their students: The effect of cognitive simplification strategies on the rating process. American Educational Research Journal, 23, 460-475.

Carter, K., Cushing, K., Sabers, D., Stein, P., & Berliner, D. (1988). Expert-novice differences in perceiving and processing visual classroom stimuli. Journal of Teacher Education, 39, 25-31.

Carter, K., & Doyle, W. (1987). Teachers' knowledge structures and comprehension processes. In J. Calderhead (Ed.), Exploring Teachers' Thinking (pp. 147-160). London: Cassell Educational Limited.

Chase, W. G., & Simon, H. A. (1973). Perception in chess. Cognitive Psychology, 4, 55-81.

Chi, M. T. H., Feltovich, P. J., & Glaser, R. (1981). Categorization and representation of physics knowledge by experts and novices. Cognitive Science, 5, 121-152.

Clark, C. M., & Peterson, P. L. (1986). Teachers thought processes. In M. Wittrock (Ed.), Handbook of Research on Teaching (3rd edition, pp. 255-296). New York: Macmillan.

Ericsson, K. A., & Simon, H. A. (1984). Protocol analysis: Verbal reports as data. Cambridge, MA: Bradford Books/MIT Press.

Fuchs, D., & Fuchs, L. S. (1994). Inclusive schools movement and the radicalization of special education reform. Exceptional Children, 60(4), 294-309.

Glaser, R., & Chi, M. T. H. (1988). Overview. In M. T. H. Chi, R. Glaser, & M. J. Farr (Eds.), The Nature of Expertise (pp. 15-27). Hillsdale, NJ: Erlbaum.

Glaser, B. G., & Strauss, A. L. (1967). The discovery of grounded theory. Chicago: Aldine.

Goldenberg, C. & Gallimore, R. (1991). Local knowledge, research knowledge, and educational change: A case study of early Spanish reading improvement. Educational Researcher, 20 (8), 2-14.

Grant, C. A., & Secada, W. W. (1990). Preparing teachers for diversity. In W. R. Houston (Ed.), Handbook of research on teacher education (pp. 401-422). New York: Macmillan.

Graves, A., Landers, M. F., Lokerson, J., Luchow, J., & Horvath, M. (1993). The development of a competency list for teachers of students with learning disabilities. Learning Disabilities Research & Practice, 8(3), 188-199.

Leinhardt, G. (1983). Novice and expert knowledge of individual student's achievement. Educational Psychologist, 18, 165-179.

Leinhardt, G., & Smith, D. A. (1985) Expertise in mathematics instruction: Subject matter knowledge. Journal of Educational Psychology, 77, 247-271.

Peterson, P. L., & Comeaux, M. A. (1987). Teachers' schemata for classroom events: The mental scaffolding of teachers' thinking during classroom instruction. Teaching and Teacher Education, 3, 319-331.

Reynolds, M. C., Wang, M. C., & Walberg, H. J. (1987). The necessary restructuring of special and regular education. Exceptional Children, 53, 391-398.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. Educational Researcher, 15, 4-14.

Sindelar, P. T., & Marks, L. J. (1993). Alternative Route Training: Implications for elementary education and special education. Teacher Education and Special Education, 16 (2), 146-154.

Stader, E., Colyar, T., & Berliner, D. C. (1990). Expert and Novice Teachers Ability to Judge Student Understanding. Paper presented at the annual meeting of the American Educational Research Association, Boston, MA.

Stainback, S., & Stainback, W. (1992). Preserving special educations...For those who need it. Controversial issues confronting special education, 13-25.

Strahan, D. B. (1989). How experienced and novice teachers frame their views of instruction: An Analysis of semantic ordered trees. Teaching & Teacher Education, 5(1), 53-67.

Strauss, A., & Corbin, J. (1990). Basics of qualitative research. Newbury Park: Sage.

Sugari, G. M., & Tindal, G. A. (1993). Effective school consultation. Pacific Grove, CA: Brooks/Cole Publishing Company.

Turnbull, H.R., III (1993). Free appropriate public education: The law and children with disabilities. Colorado: Love Publishing Company.

SPECIAL THINKING IN SPECIAL SETTINGS:
A THREE YEAR STUDY OF SPECIAL EDUCATORS

Phase One:

- Elicit nominations for twenty-five "expert" special education teachers at the elementary, middle school, and high school levels
- Observe, videotape, and conduct stimulated recall procedures with each teacher over an eight week period
- Analyze data following qualitative procedures
- Compare results to research conducted with regular education teachers

Phase Two:

- Follow a similar procedure as used in Phase One with twenty-five preservice special educators
- Compare results to those obtained in Phase One with the expert special educators

Phase Three:

- Using videotapes, audiotapes, and case studies obtained from the data collection and data analysis procedures followed in Phase One, train preservice special educators, focusing on effective instruction by special educators

- Following training using the "expert special educator" model, compare results to those obtained in Phase Two with the preservice special educators who did *not* receive training

Method

Participants

- 13 special education teachers from urban, mid-size, and rural school districts

- included preschool, elementary, middle school, and high school teachers

- taught in a range of instructional settings: inclusive, resource rooms, content mastery classroms, and self-contained classrooms.

Teacher Selection Process

special education supervisors in each district were asked to nominate teachers who:

1) had at least five years of teaching experience,
2) were recognized among their peers, parents, or the community as being effective teachers,
3) instructed students that generally made excellent progress in achieving their individualized education plan (IEP) objectives, and 4) were generally viewed as superior special education teachers.

Principals of the nominated teachers were asked to confirm or disagree with these nominations.

Method

- Interviews
- Stimulated recall procedures
- Observations
- Field notes
- Memberchecks